Since the 2016 United Kingdom EU-membership referendum, there is a renewed interest in the benefits of the EU. This study estimates the contribution of those EU-members to the the EU, that acceded in the years after 2004. Our results show that the EU-15 countries that formed the Union in the years up to 2004 would see a significant decrease in welfare if EU-13 members were not a part.

The economic benefits of EU-13 membership

Timo Baas

Introduction

Since the 2016 United Kingdom European Union (EU) membership referendum, there is a renewed interest in the benefits of the EU. Sixty years after the Treaty of Rome came into force, the EU experiences a disintegration process that puts the most prolonged trade liberalization process in modern history (Mayer et al. 2019) at risk. In order to show the public what might be lost, the "Cost of Non-Europe" debate quantifies the benefits of the EU in several academic papers. Most of these articles use econometric models, usually of the gravity type, to calculate the boost in trade that is related to transaction costs savings by several EU agreements. In these models, however, the member states of the European Union are compared to a large variety of non-EU countries.

In such a gravity analysis, Felbermayr et al. (2018) find that Membership in the single market has boosted trade in goods by about 36%. They calculate transaction cost savings, which, on average, account for a reduction of non-tariff trade costs of about 9%, given the estimated trade elasticities. The trade creation effect is even higher for trade in services. The transaction cost-savings amounts to about 34% of non-tariff trade costs, which increases service trade by 82 percent compared to the countries outside the union.

Some European agreements are, however, not directly related to EU-membership. The Eurozone is an exclusive club that shares a common currency. In this zone, trade costs are about 1.7 percent lower for trade in goods and about 9.8 percent lower for trade in services. Schengen, an agreement about abolishing border controls, is estimated to reduce trade costs by an additional 2.6 percent for goods and an additional 5.2 percent for services. The different degree of integration among the member of the union and members outside the union makes it difficult to estimate the benefits of EU-membership. If one would abolish all the agreements that exist between members and non-members, trade would reduce by about 40 percent.

Given these figures, it seems obvious that EU-membership brings significant economic benefits. But the costs of not having the EU might even be higher. In a recent study, the EU-commission calculates an amount of up to 14 percent of GDP or 2.2 trillion Euro as the cost savings that are related to the EU. The classical single market accounts for the lion share. This share is one third or roughly 713 billion euros. Policies on the environment, energy, and research, the European Monetary Union, justice, employment, and health also contribute strongly.

Compared to estimations in previous studies, the impact of EU-membership is way stronger than predicted. In the 1980s, the European Commission (1988) estimated the gain of Europe to be between 4.5 and 6.5 percent of GDP. The reason for this underestimation lies in the scope of the European agreements during this time. As a major event, the inclusion of 13 new countries into the EU deepened the single market and made the European-Union more diverse in economic terms. Today, trade between the former EU-15 and the EU-13 countries tripled, and more than seven million EU working-age citizens live in another member-state. Before the enlargement, only 2.8 million citizens took advantage of the freedom of movement.

In the tradition of the "Cost of Non-Europe" debate and to address the enlargement of the European Union after the fall of the Berlin wall, this study estimates the

contribution of those EU-members to the benefits of the EU, that acceded in the years after 2004. Our results show that the EU-15 countries that formed the union in the years up to 2004 would see a significant decrease in welfare if EU-13 countries were not members. In a nutshell, countries close to EU-13 countries and with a healthy economy tend to benefit more. These countries trade, on average, three times more with EU-13 countries than before the accession.

To calculate the economic impact of EU-13 membership for EU-15 countries, we use a Computable General-Equilibrium (CGE) model. These kinds of models are frequently used to address the benefits and costs of trade integration and, especially, EU-membership (Heijdra et al. 2002; Baas and Brücker 2010; Felbermayr 2018). The advantage of this technique is to create a counterfactual scenario that shows a world that does not exist today. In our case, a world where the EU would still consist of 15 members. By comparing the world today and the world in the counterfactual scenario, we derive the impact of the EU-13 accession.

In principle, the non-EU members in the counterfactual scenario might form close trade links with the European Union. Trade in goods in such a scenario is 15 percent lower than with EU-membership. We cover such close linkages in trade scenario one. The other possibility is implicitly assumed in gravity-type models where a large variety of countries is compared to EU-members. EU-13 countries would, like with a very hard Brexit, follow WTO rules in trade. In this scenario, trade would be 40 percent lower for non-EU-members. To calculate this scenario we used the trade-cost estimates of Felbermayr. The benefits of EU-13 membership in this scenario are significantly higher. Both scenarios form an upper and a lower bound of the benefits of EU-13 membership for EU-15 countries.

The model in brief

The standard models of trade theory suggest that the absence of costs for trade, migration, and capital movements tremendously increases the welfare of trading partners. Furthermore, the impact of labor mobility on factor prices and employment opportunities is mitigated if migration, trade, and capital movements are substitutes (Venables 1999). Under the extreme assumption that international demand for the goods markets is perfectly elastic, international migration has no impact on wages and employment opportunities. Although this is empirically not very likely, trade and capital movements might mitigate the migration impact.

We capture these aspects, by simulating the trade and migration effects in a sectorally disaggregated static CGE-model, which allows for the simultaneous impact of migration, trade, and capital movements. The empirical basis for the model forms the current input-output matrices from Eurostat. The structure of the model is based on an extended version of the IFPRI-CGE framework presented in Untiedt et al. (2007) and Baas and Brücker (2010). The specification of the model follows the neoclassic-structuralist modeling tradition presented in Dervis et.al. (1982). It consists of n = 7 groups of commodities, m = 7 groups of domestic industries. Each commodity corresponds to an industry. We derive the equations of the model from microeconomic assumptions about the behavior of price taking economic agents. Consumers maximize utility subject to their budget constraints, while producer chose inputs to minimize costs of production. The technology of production is reflected by a CES or Leontief function whereby resources are limited and distributed by market forces. An important feature of the model is the reflection of the labor market imperfections by a wage curve.

Furthermore, government consumption is restricted to tax income and borrowing, which has implications for other economic agents. We link the economy to the rest of the world and the EU-13 countries using an Armington framework. Moreover, this model allows the analysis of the effects of migration for production, wages, and employment at the sectoral level.

The model crucially depends on current input-output matrices and needs to reflect special characteristics of the European Union, like the advanced social-security system. Therefore, the model is calibrated on Eurostat data and not the GTAP database. Consequently, results can vary to other CGE type of models like Felbermayr et al. (2018).

A disadvantage of our model is its static nature. Gains from foreign direct investment and trade resulting from a more robust economic growth of EU-13 countries are not covered. These gains increase over time so that we might underestimate the GDP gains of EU-15 countries to some extend.

Scenarios and Results

The results of our analyses are divided according to five scenarios. In the first scenario, we use the assumption that the increase in trade that we observe since 2004 relies on the EU-enlargement[1]. In the second scenario, we rely on the calculations of Felbermayer (2018) estimating cost savings for imports and exports of between 9 and 34 percent depending on the different sectors of the economy. In the third and fourth scenario, we add migration to the first and second trade scenario. The fifths scenario shows the impact of migration without trade. We use the third scenario for the presentation of the main findings in the next chapter. The results of all five scenarios are presented for each country in the annex of this study.

In the first scenario, by using a similar method like Felbermayr (2018), we can distinguish between import and export cost savings. For EU-15 countries, the import cost saving is between 3 and 9 percent, and the export cost saving between 0.8 and 6 percent. However, the cost-saving is significantly lower than estimated by Felbermayer et al. (2018). Contractual arrangements like the European Agreements signed in 1994 may account for this effect. Furthermore, the EU-13 countries are still growing faster than EU-15 countries, which may increase trade gains in the years to come.

In the second scenario, we rely on the gravity estimates of Felbermayr et al. (2018) to calculate two-sided trade cost savings. Trade in the counterfactual scenario would be up to 40 percent lower than it is today, which has a substantial impact on the economy of the EU-15 countries. To interpret the results of this scenario, one has to keep in mind that the gravity model compares very different countries with very different histories in bilateral trade. For EU-13 countries, economic integration might not have reached a similarly advanced stage than that of EU-15 countries. Some of the trade gains in this scenario might be to come. Additionally, trade links between EU-13 and EU-15 countries are assumed to be tiny. This would correspond to a hard Brexit scenario. That's why the results of this scenario should be interpreted as an upper bound of possible gains of EU-13 accession.

For the fifth scenario, we assume that the single-market has led to a strong increase in labour mobility. The reason for this assumption lies in the previous migration pattern that we observed. EU-countries limit Extra-EU migration to high skilled migrants or skilled migrants with jobs in demanded sectors. Migration flows, therefore, are small. Germany, as an example, opened labor markets for countries that acceded 2008 not before 2011. Migration during this time was small, Germany increased its workforce only by 0.06 percent. Today, with open labor markets, Germany receives the highest absolute number of mobile EU-citizens and could increase its workforce due to the inflow of EU-13 citizens by 2.2 percent.

In the third scenario, we combine the moderate decrease of transaction costs from the first scenario and the increase in migration of the fifth scenario. This enables us to address the impact of trade and migration. We use this scenario to discuss the main findings of the study in the next chapter and for discussing the gains in GDP in the fourth chapter.

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[1] We considerd the increase in trade that non EU-members had with EU members during the years since accession in our estimation.

In the fourth scenario, we combine the large decrease in transaction costs from the Felbermayr scenario with the increase in migration of the fifth scenario. We use this scenario for the upper-bound of trade gains calculated in the fourth chapter of this study.

Main findings

The main findings presented in this chapter rely on the third scenario, considering both trade and migration. In all EU-15 countries analyzed in this study, GDP is increasing (Table 1). Germany, as the biggest trading partner of EU-13 countries and one of the leading destinations of mobile EU-citizens, can increase GDP by 2.8 percent. The manufacturing and the construction sector both massively benefit from the EU-13 accession. This is also true for Austria, Denmark, and Sweden. In Belgium and the United Kingdom, the construction sector is the sector that benefits most. All these countries experience a significant gain in GDP.

In Italy and Ireland, though, the decrease in import costs affects the competitiveness of the manufacturing sector. Manufacturing has to decrease production because the accession of EU-13 countries resulted in a more intense competition for exports to non-EU-13 countries. As a consequence, the increase in GDP is tiny in both countries. Consumers, however, benefit from lower prices and can increase welfare.

Luxembourg, in all our scenarios, is an exception. There the increase in GDP is highest. The reason for this effect is the trade, the transportation and the financial sector all massively benefit from a decrease in transaction costs. This result is in line with Felbermayr et al. (2018), who also sere gains in service sectors to be highest. Additionally, Luxembourg also benefits strongly from migration. If Luxembourg would like to keep up production at the actual level, it would have to pay natives 30 percent more than mobile EU-13 citizens get today.

A compelling case is Greece. Greece is benefiting from EU-13 accession solely through cheaper input goods that help Greece to keep-up exports in manufacturing. This effect, however, has declined during the severe economic crisis in Greece during the last eight years.

Besides a positive impact on GDP, EU-13 accession increases the welfare of EU-15 citizens by significant amounts. Welfare can be interpreted as a higher utility of households. It may be the case that a country benefits more from an increase in imports than an increase in exports. At least in the short run, these asymmetric gains have a dampening impact on GDP. Nevertheless, as import goods are cheaper than domestically produced goods, households experience an increase in utility. Consequently, in countries where we have a substantial increase in imports, we also see a sharp gain in consumption. As more people consume, countries also experience an increase in taxes.

Although most countries experience significant gains in GDP, the impact of EU-13 accession on wages in EU-15 countries is mixed. In countries where we have a negative impact on manufacturing like Italy and Ireland, wages tend to decrease. In countries where we have a strong inflow of mobile EU-13 citizens, wages also tend to fall. For the latter, migrants bear the fall in salaries themselves by getting less than natives. In other countries like Belgium, the increase in trade results in higher wages.

Table 1: Impact of Migration and Trade on the EU-15 Countries

	GDP	Consumption	Tax	Exports EU-13	Exports Non EU-13	Imports EU-13	Imports Non-EU 13	Wages	Unemployment	Welfare
					Change in percent					
Austria	1.77	3.73	6.37	23.00	-2.59	9.82	9.82	1.16	0.10	8.22
Belgium	3.29	2.39	2.30	6.75	-4.07	1.78	2.23	-2.01	0.15	4.13
Denmark	1.84	1.78	1.72	7.99	1.49	2.14	2.09	0.28	-0.02	2.95
Finland	0.65	0.99	1.30	4.05	-1.87	1.87	1.96	-0.30	0.02	1.84
France	0.60	0.22	0.86	7.10	-0.97	1.70	1.58	0.16	-0.01	0.22
Germany	2.83	2.65	3.38	7.43	1.82	4.68	4.34	-0.10	0.01	5.12
Greece	1.95	0.16	0.63	6.91	7.54	2.46	1.58	1.44	-0.11	-0.24
Ireland	0.04	1.00	1.70	2.09	-3.32	7.89	3.35	-1.59	0.12	0.41
Italy	0.05	2.77	0.78	0.79	-3.61	2.30	2.33	-1.94	0.15	5.62
Luxembourg	6.20	4.01	3.25	12.64	3.50	3.52	2.58	1.85	-0.14	8.00
Netherlands	0.33	1.08	3.77	0.90	-5.05	2.92	2.79	-0.82	0.06	0.40
Portugal	0.20	0.13	0.14	9.71	-0.30	0.30	0.32	0.05	0.00	0.23
Spain	0.30	0.60	0.48	4.76	-0.88	1.02	1.02	-0.25	0.02	1.11
Sweden	1.18	1.02	1.17	12.98	0.53	2.15	2.18	0.04	0.00	1.44
United Kingdom	1.51	1.60	2.32	1.75	-0.19	2.44	2.48	-1.44	0.11	2.88

Source: Authors calculations

Costs and benefits of EU-13 accession

In this section, we show a simple cost-benefit analysis of EU-accession by comparing the financial expenses of EU-15 for EU-13 countries with the gains related to the increase in migration and trade. We use the yearly average of expenditures between 2014 and 2018 and compare them with the yearly gains in GDP that result from lower transaction costs and migration as elaborated in the third scenario and fourth scenario. It is possible to make this comparison, as the gain in GDP is a level effect. The reduction in transaction costs due to EU-accession exists as long as the specific countries are members of the European Union. In the case of ending membership, like it was the case with the exit of the United Kingdom in January 2020, new trade agreements have to be negotiated with the European Commission. These agreements are very likely to be less beneficial than being a member of the Union. Felbermeyr (2018) and Mayer (2018) expect the increase in transaction costs to amount to 9 percent for trade in goods and 34 percent for trade in services. If we assume that EU15 countries face similar costs if EU-13 countries depart, the GDP gains in the Felbermayr (2018) scenario exceed the expenditures for EU-13 countries by significant amounts.

Table 2: The trade effect of EU-13 membership on GDP

	GDP gain Migration and Traden scenario	GDP gain Migration and Trade (Felbermayr scenario)	Expenditures of EU-15 for EU 13 countries (yearly average)
	Million Euro		
Austria	6,845	24,535	1,068
Belgium	15,115	3,819	1,386
Denmark	5,531	9,644	843
Finland	1,519	15,403	696
France	14,203	39,594	7,342
Germany	94,591	461,014	8,947
Greece	3,606	10,860	565
Ireland	131	11,791	691
Italy	848	8,976	5,409
Luxembourg*	3,726	8,507	120
Netherlands	2,564	23,808	1,778
Portugal	417	1,665	606
Spain	3,589	14,965	3,621
Sweden	5,572	19,036	1,228
United Kingdom	36,598	66,743	5,066

Note: Service trade cost reduction for Luxembourg is assumed to be only 2/3 of that of the other EU-15 countries

Source: EU-Commission, 2019; Authors calculations

In the scenario that we presented in the previous chapter, we assumed significantly lower gains in trade than in the Felbermayr scenario. The reason was that on the one

side, EU-13 countries had tighter trade ties with EU-15 countries already before enlargement, and on the other hand, that trade between EU-13 and EU-15 countries may not have experienced all potential trade gains, yet.

The difference between both scenarios, however, lies not only in the amount of transaction cost savings. In the Felbermayr scenario, transaction cost savings are universal for imports from and exports, while in our standard scenario, we assumed differences. Concerning the different sectors of the economy, we could not identify very different transaction cost savings for the trade and service sectors for our standard scenario. In the Felbermayr scenario, transaction costs savings for trade in services are four times the transaction costs savings for trade in goods. As trade in services is very important for Luxembourg and to a lesser extend for Finland, the differences between our standard scenario and the Felbermayr scenario are hight. For Belgium, instead, higher transaction cost savings for imports harm domestic production and the export industry. Belgium, therefore, is the only country where GDP gains in the Felbermayr scenario are way lower than in the standards scenario. Other countries like Germany, France, Austria, and Sweden gain from the higher amount of transaction cost saving in the Felbermayr scenario that is affecting especially exports.

Nevertheless, If we use the lower estimates of our standard scenario, we still calculate GDP gains for most countries to exceed the expenses these countries undertake for EU-13 countries (Table 2). For Italy and Ireland, however, the GDP gains are too small to cover the costs, and for Spain and Portugal, the costs are very similar to the increases in GDP.

As also shown in the previous section, the benefits of the EU-13 accession are not limited to an increase in GDP. Welfare and the utility of households are increasing sharply, as cheaper import goods help to reduce the cost of living and the costs of production.

Conclusions

In 2016, the result of the Brexit referendum took politicians and EU-citizens by surprise. For the first time since its foundation in the 1950s, the European Union is about to disintegrate. This far-reaching event renewed the interest in quantifying the benefits of the European integration process, which was done the last time in the 1980s to facilitate the completion of the single market. Out of technical reasons, it is difficult to estimate the benefits of the EU, as we have no historical experiences of countries that switch between membership and non-membership. The framework that is applied in such situations is usually the CGE framework, as it can work with counterfactual assumptions. Crucial, however, is the quantity of transaction costs that we have to add to cover the cost of Non-Europe. In this paper, we have applied two different measures for these costs, one that analyses the different between EU-countries and close trading partners, and that leads to moderate trade cost increases in the counterfactual scenario and one where a gravity model compares EU-countries to a large variety of other countries resulting in significantly higher gains.

Our standard scenario, however, might underestimate the amount of transaction cost savings. The European agreements signed in the 1990s that boosted trade before enlargement are not independent of EU-accession. These agreements enabled the EU-countries and the EU-13 to partly gain from transaction cost savings that otherwise were related to EU-accession. Additionally, the steady growth of EU-13 countries may increase trade gains over time so that we have not seen the full amount of transaction cost savings, yet.

The Felbermayr scenario, on the other hand, may overestimate transaction cost savings of EU-membership. It is doubtful that in a world where the EU-13 countries were not EU-members, there would be only loose trade ties with the European Union. The more integrated the EU-13 countries are with EU-15 countries, the lower are the costs for the EU-15 to not have the EU-13 as EU-members.

Taking the standard scenario as a lower and the Felbermayr scenario as an upper bond, our results indicate that the EU-15 countries strongly benefit from EU-13 membership. Most countries either benefit from an increase in trade or an increase in migration or both. As a consequence, EU-15 citizens can strongly increase welfare. In the political debate, however, this is related to the costs that EU-15 countries cover to improve the living conditions of EU-13 countries. Even if we assume trade according to our lower bound scenario, for most EU-15 countries, these costs can easily be covered by the gain in GDP these countries experience because of accession.

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Results by country

Austria

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
GDP	0.22	4.72	1.77	6.36	1.57
Consumption	-0.07	-0.49	4.11	3.73	4.16
Investment	-0.87	33.82	-6.18	28.28	-5.36
Tax	0.30	0.30	0.30	0.30	-0.28
Exports to EU-13	3.36	19.16	6.42	23.00	3.09
Exports to non EU-13	0.42	-5.68	3.21	-2.59	2.90
Imports from EU-13	-0.01	7.97	1.65	9.82	1.66
Imports from non EU-13	-0.01	7.99	1.62	9.82	1.63
Wages	0.22	2.67	-1.29	1.16	-1.49

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
Agriculture, hunting and forestry	0.97	2.14	1.30	1.01	2.17
Mining and manufacturing	0.26	-0.98	-2.61	-4.39	-4.18
Electricity, water and construction	0.11	-0.11	3.04	1.41	1.14
Wholesale trade and transportation	0.98	1.17	0.40	0.42	1.50
Accomodation, information and communication	1.17	1.03	-0.40	-5.80	-4.71
Financial services and real estate	0.09	-0.71	-0.87	2.52	2.45
Other service sectors	0.99	0.72	-0.26	-0.18	0.97

Belgium

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
GDP	2.83	0.87	3.29	0.83	0.90
Consumption	-0.38	-0.03	1.70	2.27	1.73
Investment	-11.70	26.48	-12.02	20.17	-5.15
Tax	-2.25	-2.25	-2.25	-2.25	-0.10
Exports to EU-13	14.48	18.65	15.52	18.90	3.69
Exports to non EU-13	8.26	-4.88	8.84	-4.67	3.00
Imports from EU-13	0.69	4.14	1.92	4.09	1.18
Imports from non EU-13	0.15	5.27	1.51	5.13	1.20
Wages	2.36	0.27	1.64	-3.35	-0.51

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
Agriculture, hunting and forestry	-10.67	1.46	-12.39	0.89	1.57
Mining and manufacturing	4.16	-1.35	9.82	-0.32	-0.18
Electricity, water and construction	-0.67	1.97	5.43	1.17	1.15
Wholesale trade and transportation	0.75	0.89	-1.98	-0.03	0.20
Accomodation, information and communication	0.57	1.38	-2.08	0.24	0.79
Financial services and real estate	0.35	0.55	-1.57	0.01	0.17
Other service sectors	0.63	0.97	-0.73	-0.11	0.47

Denmark

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
GDP	1.28	2.63	1.84	3.20	0.56
Consumption	1.17	1.84	1.78	2.47	0.61
Investment	2.38	16.45	3.69	17.87	1.25
Tax	0.69	0.69	0.69	0.69	-0.25
Exports to EU-13	7.22	23.84	7.99	24.74	0.74
Exports to non EU-13	0.77	-1.44	1.49	-0.74	0.73
Imports from EU-13	1.41	5.12	2.14	5.87	0.71
Imports from non EU-13	1.35	5.30	2.09	6.07	0.72
Wages	0.88	1.34	0.28	0.74	-0.59

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
Agriculture, hunting and forestry	1.08	2.18	1.79	-0.59	0.49
Mining and manufacturing	0.75	1.65	1.56	-0.24	0.47
Electricity, water and construction	0.76	1.36	0.22	4.81	5.65
Wholesale trade and transportation	0.56	0.54	-0.01	-2.79	-2.28
Accomodation, information and communication	0.72	0.28	-0.54	2.90	3.72
Financial services and real estate	0.52	0.49	-0.11	0.76	1.28
Other service sectors	0.25	0.33	0.13	0.15	0.40

Finland

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
GDP	0.36	6.37	0.65	6.57	0.28
Consumption	0.01	-2.81	0.99	-1.73	0.98
Investment	6.31	18.34	5.22	17.05	-1.11
Tax	1.06	1.06	1.06	1.06	-0.09
Exports to EU-13	3.53	66.88	4.05	66.82	0.50
Exports to non EU-13	-2.34	8.98	-1.87	9.25	0.48
Imports from EU-13	1.43	3.24	1.87	3.71	0.43
Imports from non EU-13	1.50	4.07	1.96	4.55	0.45
Wages	0.09	5.33	-0.30	4.83	-0.39

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
Agriculture, hunting and forestry	0.15	0.03	-0.10	-0.96	-0.79
Mining and manufacturing	0.49	-0.76	-1.53	-3.52	-2.99
Electricity, water and construction	-0.27	2.50	2.78	6.90	6.60
Wholesale trade and transportation	0.48	-0.20	-0.79	-3.00	-2.48
Accomodation, information and communication	0.44	0.93	1.51	24.35	24.44
Financial services and real estate	0.31	0.43	0.14	-0.99	-0.67
Other service sectors	0.37	0.35	-0.03	-1.34	-0.94

France

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
GDP	0.50	1.58	0.60	1.68	0.10
Consumption	-0.08	-0.45	0.22	-0.15	0.30
Investment	4.68	9.15	4.46	8.92	-0.22
Tax	0.72	0.72	0.72	0.72	-0.02
Exports to EU-13	6.94	27.21	7.10	27.39	0.15
Exports to non EU-13	-1.09	0.68	-0.97	0.81	0.12
Imports from EU-13	1.54	3.52	1.70	3.68	0.15
Imports from non EU-13	1.42	3.18	1.58	3.34	0.16
Wages	0.27	1.04	0.16	0.93	-0.11

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
Agriculture, hunting and forestry	0.00	0.09	0.22	-0.03	-0.04
Mining and manufacturing	0.17	-0.42	-0.55	-0.19	-0.02
Electricity, water and construction	-0.02	2.22	2.15	4.44	4.42
Wholesale trade and transportation	0.16	-0.39	-0.56	-0.52	-0.35
Accomodation, information and communication	0.13	0.57	0.45	0.44	0.56
Financial services and real estate	0.11	0.13	0.05	-0.06	0.05
Other service sectors	0.12	0.04	-0.08	-0.28	-0.16

Germany

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
GDP	2.11	13.35	2.83	13.78	0.73
Consumption	-0.26	-4.57	2.65	-1.21	2.88
Investment	17.26	53.44	12.96	48.50	-4.21
Tax	2.57	2.57	2.57	2.57	-0.18
Exports to EU-13	7.44	59.35	7.43	58.09	0.02
Exports to non EU-13	1.82	22.87	1.82	22.03	0.04
Imports from EU-13	3.59	10.84	4.68	12.15	1.05
Imports from non EU-13	3.19	11.02	4.34	12.29	1.10
Wages	1.10	9.29	-0.10	7.71	-1.17

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
Agriculture, hunting and forestry	0.36	0.30	0.11	-1.94	-1.49
Mining and manufacturing	0.54	1.96	1.32	9.27	9.58
Electricity, water and construction	-0.55	5.30	5.94	15.87	15.41
Wholesale trade and transportation	1.23	1.05	-0.26	-1.30	0.00
Accomodation, information and communication	1.54	1.01	-0.19	9.96	11.01
Financial services and real estate	2.18	0.07	-2.04	-7.83	-5.51
Other service sectors	1.20	0.93	-0.29	-2.69	-1.37

Greece

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
GDP	1.95	5.88	1.95	5.88	0.00
Consumption	0.16	0.27	0.16	0.27	0.00
Investment	3.72	-11.06	3.72	-11.06	0.00
Tax	-0.28	-0.28	-0.28	-0.28	0.00
Exports to EU-13	6.91	58.96	6.91	58.96	0.00
Exports to non EU-13	7.54	25.60	7.54	25.60	0.00
Imports from EU-13	2.46	4.41	2.46	4.41	0.00
Imports from non EU-13	1.58	2.86	1.58	2.86	0.00
Wages	1.44	4.71	1.44	4.71	0.00

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
Agriculture, hunting and forestry	0.15	-0.03	0.09	0.02	0.10
Mining and manufacturing	12.61	4.49	11.40	4.49	11.41
Electricity, water and construction	-5.09	0.67	-2.79	0.66	-2.80
Wholesale trade and transportation	-0.82	-1.01	-0.86	-1.13	-0.87
Accomodation, information and communication	-0.96	-0.26	0.05	-0.26	0.06
Financial services and real estate	-0.89	-0.28	-0.85	-0.28	-0.86
Other service sectors	-0.77	-0.28	-0.74	-0.28	-0.74

Italy

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
GDP	0.00	0.50	0.05	0.51	0.05
Consumption	0.13	0.29	2.77	2.94	2.65
Investment	3.80	11.07	-1.42	5.89	-5.26
Tax	0.36	0.36	0.36	0.36	-0.37
Exports to EU-13	2.21	16.55	0.79	14.82	-1.33
Exports to non EU-13	-2.29	-5.02	-3.61	-6.44	-1.29
Imports from EU-13	1.25	4.15	2.30	5.25	1.03
Imports from non EU-13	1.22	4.17	2.33	5.33	1.09
Wages	-0.16	-0.06	-1.94	-1.87	-1.77

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
Agriculture, hunting and forestry	0.67	0.72	0.21	0.23	0.87
Mining and manufacturing	0.21	-0.62	-1.31	-1.99	-1.85
Electricity, water and construction	-1.51	0.03	1.62	4.35	2.94
Wholesale trade and transportation	0.81	0.44	-0.51	-0.90	-0.10
Accomodation, information and communication	1.24	1.53	0.46	0.73	2.01
Financial services and real estate	0.80	0.91	0.19	0.27	1.07
Other service sectors	1.21	1.28	0.14	0.11	1.34

Ireland

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
GDP	-0.23	3.43	0.04	3.64	0.26
Consumption	-0.31	0.70	1.18	2.16	1.51
Investment	5.05	10.48	6.91	12.89	1.55
Tax	0.80	0.80	0.80	0.80	-0.41
Exports to EU-13	1.93	36.63	1.76	36.37	-0.02
Exports to non EU-13	-2.03	-2.78	-2.20	-3.20	-0.10
Imports from EU-13	3.84	9.31	5.53	11.39	1.44
Imports from non EU-13	1.32	1.84	2.53	3.19	1.13
Wages	-0.25	2.08	-1.47	0.81	-1.23

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
Agriculture, hunting and forestry	0.97	2.14	1.30	1.01	2.17
Mining and manufacturing	0.26	-0.98	-2.61	-4.39	-4.18
Electricity, water and construction	0.11	-0.11	3.04	1.41	1.14
Wholesale trade and transportation	0.98	1.17	0.40	0.42	1.50
Accomodation, information and communication	1.17	1.03	-0.40	-5.80	-4.71
Financial services and real estate	0.09	-0.71	-0.87	2.52	2.45
Other service sectors	0.99	0.72	-0.26	-0.18	0.97

Luxembourg

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
GDP	4.97	10.14	6.20	11.48	1.17
Consumption	-0.19	-1.93	4.01	2.71	4.02
Investment	-6.40	-3.87	-2.42	0.93	3.95
Tax	0.49	1.42	0.49	3.78	-0.63
Exports to EU-13	10.97	20.65	12.64	22.44	1.58
Exports to non EU-13	2.49	7.74	3.50	8.73	0.99
Imports from EU-13	2.37	15.93	3.52	17.97	1.13
Imports from non EU-13	1.32	1.22	2.58	1.22	1.24
Wages	3.88	11.55	1.85	9.39	-1.96

Note: Trading cost reduction for the service sectors in the Felbermay scenarios for Luxembourg is reduced to 2/3 of the other countries.

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
Agriculture, hunting and forestry	-3.23	-9.01	-6.95	-14.99	-3.22
Mining and manufacturing	3.52	-5.44	-4.82	-1.69	3.51
Electricity, water and construction	3.48	-4.58	-8.60	-0.79	3.48
Wholesale trade and transportation	1.00	9.28	21.15	9.99	0.99
Accomodation, information and communication	2.30	-1.63	-7.17	0.48	2.30
Financial services and real estate	1.05	2.97	-2.89	4.10	1.05
Other service sectors	1.99	-1.22	-1.48	-1.80	1.98

Netherlands

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
GDP	0.07	2.82	0.33	3.08	0.28
Consumption	0.08	-0.05	1.08	0.96	1.00
Investment	20.52	67.45	19.55	66.50	-1.06
Tax	3.61	3.61	3.61	3.61	-0.17
Exports to EU-13	0.52	8.57	0.90	9.02	0.39
Exports to non EU-13	-5.44	-13.65	-5.05	-13.29	0.44
Imports from EU-13	2.54	8.16	2.92	8.56	0.37
Imports from non EU-13	2.42	7.75	2.79	8.14	0.36
Wages	-0.37	0.92	-0.82	0.44	-0.45

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
Agriculture, hunting and forestry	0.01	0.34	0.34	0.74	0.77
Mining and manufacturing	0.39	-3.25	-3.81	-12.14	-11.77
Electricity, water and construction	-0.18	7.87	8.24	25.62	25.52
Wholesale trade and transportation	0.41	0.28	-0.13	-1.04	-0.62
Accomodation, information and communication	0.45	0.52	0.11	1.72	2.16
Financial services and real estate	0.41	0.14	-0.26	-0.18	0.23
Other service sectors	0.32	0.22	-0.09	-0.42	-0.10

Portugal

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
GDP	0.17	0.78	0.20	0.82	0.03
Consumption	0.02	0.05	0.13	0.17	0.11
Investment	1.19	5.08	0.97	4.85	-0.23
Tax	0.10	0.10	0.10	0.10	-0.01
Exports to EU-13	9.67	22.94	9.71	22.98	0.04
Exports to non EU-13	-0.33	-0.20	-0.30	-0.17	0.04
Imports from EU-13	0.24	0.99	0.30	1.05	0.06
Imports from non EU-13	0.26	1.10	0.32	1.16	0.06
Wages	0.11	0.52	0.05	0.47	-0.06

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
Agriculture, hunting and forestry	0.02	0.10	0.06	0.07	0.08
Mining and manufacturing	0.04	-0.05	-0.10	-0.26	-0.21
Electricity, water and construction	-0.04	0.35	0.40	1.59	1.55
Wholesale trade and transportation	0.05	0.00	-0.06	-0.23	-0.18
Accomodation, information and communication	0.06	0.11	0.04	0.33	0.39
Financial services and real estate	0.04	0.06	0.03	0.09	0.13
Other service sectors	0.07	0.05	-0.01	-0.07	-0.01

Spain

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
GDP	0.17	1.12	0.30	1.24	0.13
Consumption	0.10	0.21	0.60	0.71	0.50
Investment	2.58	6.70	1.91	6.03	-0.67
Tax	0.27	0.27	0.27	0.27	-0.06
Exports to EU-13	4.69	23.91	4.76	23.98	0.07
Exports to non EU-13	-0.95	-0.24	-0.88	-0.17	0.07
Imports from EU-13	0.78	2.51	1.02	2.75	0.24
Imports from non EU-13	0.79	2.55	1.02	2.78	0.23
Wages	0.02	0.61	-0.25	0.34	-0.27

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
Agriculture, hunting and forestry	-0.01	0.10	0.16	0.14	0.12
Mining and manufacturing	0.21	-0.25	-0.50	-0.61	-0.40
Electricity, water and construction	-0.07	0.74	0.79	2.10	2.03
Wholesale trade and transportation	0.22	-0.09	-0.37	-0.56	-0.33
Accomodation, information and communication	0.25	0.36	0.17	0.44	0.69
Financial services and real estate	0.20	0.28	0.10	0.16	0.36
Other service sectors	0.26	0.27	0.02	-0.06	0.19

Sweden

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
GDP	0.79	3.66	1.18	4.04	0.38
Consumption	-0.19	-1.20	1.02	0.05	1.21
Investment	4.08	13.54	3.30	12.69	-0.78
Tax	0.84	0.84	0.84	0.84	-0.13
Exports to EU-13	12.26	32.17	12.98	32.92	0.62
Exports to non EU-13	-0.14	3.11	0.53	3.76	0.63
Imports from EU-13	1.54	4.12	2.15	4.76	0.60
Imports from non EU-13	1.54	4.29	2.18	4.95	0.62
Wages	0.48	2.61	0.04	2.14	-0.45

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
Agriculture, hunting and forestry	0.15	1.24	1.11	0.97	1.11
Mining and manufacturing	0.74	1.57	0.79	0.97	1.76
Electricity, water and construction	-0.03	1.76	1.89	6.17	6.12
Wholesale trade and transportation	0.56	0.19	-0.38	-1.19	-0.63
Accomodation, information and communication	0.30	-0.54	-0.88	0.54	0.77
Financial services and real estate	0.37	0.24	-0.13	0.26	0.62
Other service sectors	0.33	0.21	-0.12	-0.49	-0.16

United Kingdom

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
GDP	0.24	1.46	1.51	2.75	1.26
Consumption	0.15	1.43	1.60	2.91	1.44
Investment	3.89	-0.81	7.11	2.32	3.18
Tax	0.52	0.52	0.52	0.52	-0.29
Exports to EU-13	0.47	47.99	1.75	49.79	1.26
Exports to non EU-13	-1.15	1.78	-0.19	2.81	0.95
Imports from EU-13	0.98	1.25	2.44	2.72	1.45
Imports from non EU-13	0.95	1.48	2.48	3.03	1.52
Wages	0.03	1.14	-1.44	-0.32	-1.47

	Trade	Trade Felbermayr	Migration and Trade	Migration and Trade (Felbermayr)	Migration
Agriculture, hunting and forestry	0.73	0.72	0.05	-0.18	0.54
Mining and manufacturing	1.96	1.48	-0.45	-0.99	0.95
Electricity, water and construction	1.83	3.28	1.07	-0.28	1.53
Wholesale trade and transportation	1.82	1.46	-0.41	-0.73	1.07
Accomodation, information and communication	1.89	1.84	0.34	2.81	4.89
Financial services and real estate	0.88	0.83	0.02	0.34	1.20
Other service sectors	0.92	0.92	0.06	0.36	1.29